

# REPORT ON BOILERS.

No. 9259

Received at London Office

16 OCT 1941

Date of writing Report 9th Oct 1941 When handed in at Local Office 9th Oct 1941 Port of Dundee

No. in Survey held at Dundee Date, First Survey 24th Dec 1940 Last Survey 26th June 1941

g. Book. 2530 on the R.F.A. "GRAY RANGER" (Number of Visits 26 in shop. Gross 3313 Tons Net 1506)

Master Built at Dundee By whom built Baldon S.B. & E. Co. Ltd Yard No. 390 When built 1941

Engines made at Sunderland By whom made Wm Doxford & Sons Ltd Engine No. 218 When made 1941

Boilers made at Dundee By whom made Baldon S.B. & E. Co. Ltd Boiler No. 590 When made 1941

Indicated Horse Power 148 Owners The Admiralty Port belonging to London

## MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY. (Composite)

Manufacturers of Steel Bolville's Ltd. (Letter for Record S.)

Total Heating Surface of Boilers 2800 sq. ft. Is forced draught fitted yes Coal or Oil fired Exhaust Gas & Oil

No. and Description of Boilers One Single-ended Multitubular Working Pressure 150 lbs

Tested by hydraulic pressure to 275 lbs Date of test 20-6-41 No. of Certificate 1042 Can each boiler be worked separately yes

Area of Firegrate in each Boiler fixed No. and Description of safety valves to each boiler Double High Lift

Area of each set of valves per boiler per Rule Approved 15.64 for old Pressure to which they are adjusted 155 lbs Are they fitted with easing gear yes

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler ✓

Smallest distance between boilers or uptakes and bunkers or woodwork Boiler in 'ho deck Is oil fuel carried in the double bottom under boilers ✓

Smallest distance between shell of boiler and tank top plating 1'8" to Water Ballast Tank Top Is the bottom of the boiler insulated yes

Largest internal dia. of boilers 13'-4 13/16" Length 11'-6" Shell plates: Material Steel Tensile strength 29/33 tons

Thickness 29/32" Are the shell plates welded or flanged No Description of riveting: circ. seams end R. Lap inter. ✓

Long. seams T.R. Double Butt Straps Diameter of rivet holes in circ. seams 1 1/8" Pitch of rivets 3.534" long. seams 15/16" 65/8"

Percentage of strength of circ. end seams plate 66% rivets 46.75% Percentage of strength of circ. intermediate seam plate 85.84% rivets 85.4% combined 88.5%

Percentage of strength of longitudinal joint plate 85.84% rivets 85.4% combined 88.5% Working pressure of shell by Rules 152 lbs

Thickness of butt straps outer 1 1/16" inner 13/16" No. and Description of Furnaces in each Boiler Two Corrugated - Deighton Section

Material Steel Tensile strength 26/30 tons Smallest outside diameter 3'-5 1/2"

Length of plain part top 43/8" bottom 43/8" Thickness of plates crown 7/16" bottom 7/16" Description of longitudinal joint Weld

Dimensions of stiffening rings on furnace or c.c. bottom None Working pressure of furnace by Rules 163 lbs

End plates in steam space: Material Steel Tensile strength 26/30 tons Thickness 1 1/16" Pitch of stays 20" X 17"

How are stays secured Double Nuts & Washers Working pressure by Rules 152 lbs

End plates: Material front Steel back Steel Tensile strength 26/30 tons Thickness 27/32" 1 1/16"

Lean pitch of stay tubes in nests 9 1/16" Pitch across wide water spaces 13 1/2" Working pressure front 155 lbs back 200 lbs

Orders to combustion chamber tops: Material Steel Tensile strength 28/32 tons Depth and thickness of girder

Centre 8 X (2 X 3/8") Length as per Rule 27 3/4" Distance apart 10" No. and pitch of stays

each 2-8 1/2" Working pressure by Rules 178 lbs Combustion chamber plates: Material Steel

Tensile strength 26/30 tons Thickness: Sides 5/8" Back 9/16" Top 5/8" Bottom 5/8"

Pitch of stays to ditto: Sides 9 1/2" X 9" Back 8 1/2" X 8 1/4" Top 10" X 8 1/2" Are stays fitted with nuts or riveted over Nuts

Working pressure by Rules 154 lbs Front plate at bottom: Material Steel Tensile strength 26/30 tons

Thickness 27/32" Lower back plate: Material Steel Tensile strength 26/30 tons Thickness 3/4"

Pitch of stays at wide water space 13 1/2" X 8 1/4" Are stays fitted with nuts or riveted over Nuts

Working Pressure 181 lbs Main stays: Material Steel Tensile strength 28/32 tons

Diameter At body of stay, 2 1/2" No. of threads per inch 6 Area supported by each stay 340 sq"

Over threads, 2 3/4" Working pressure by Rules 156 lbs Screw stays: Material Steel Tensile strength 26/30 tons

Diameter At turned off part, 1 1/2" No. of threads per inch 9 Area supported by each stay 85.5 sq"



Working pressure by Rules 175 lbs Are the stays drilled at the outer ends No Margin stays: Diameter { At turned off part, or Over threads 1 5/8"

No. of threads per inch 9 Area supported by each stay 90 3/4" Working pressure by Rules 163 lbs

Tubes: Material Steel External diameter { Plain 2 1/2" | 2 1/2" | 2 1/2" Thickness { 9 W.G. | 5/16" | 3/8" No. of threads per inch 9

Pitch of tubes 3 7/8", 3" in Gas Chamber Working pressure by Rules 164 lbs Manhole compensation: Size of opening

shell plate 20" x 16" Section of compensating ring 9 1/2" x 1" No. of rivets and diameter of rivet holes 40 - 1" dia

Outer row rivet pitch at ends 7" Depth of flange if manhole flanged 3" Steam Dome: Material 5-30

Tensile strength \_\_\_\_\_ Thickness of shell \_\_\_\_\_ Description of longitudinal joint \_\_\_\_\_

Diameter of rivet holes \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Percentage of strength of joint { Plate \_\_\_\_\_ Rivets \_\_\_\_\_

Internal diameter \_\_\_\_\_ Working pressure by Rules None Thickness of crown \_\_\_\_\_ No. and diameter \_\_\_\_\_

stays \_\_\_\_\_ Inner radius of crown \_\_\_\_\_ Working pressure by Rules \_\_\_\_\_

How connected to shell \_\_\_\_\_ Size of doubling plate under dome \_\_\_\_\_ Diameter of rivet holes and pitch \_\_\_\_\_

of rivets in outer row in dome connection to shell \_\_\_\_\_

**Type of Superheater** \_\_\_\_\_

**Manufacturers of** { Tubes \_\_\_\_\_  
Steel castings \_\_\_\_\_

**Number of elements** \_\_\_\_\_ **Material of tubes** \_\_\_\_\_ **Internal diameter and thickness of tubes** \_\_\_\_\_

**Material of headers** \_\_\_\_\_ **Tensile strength** \_\_\_\_\_ **Thickness** \_\_\_\_\_ **Can the superheater be shut off and the boiler be worked separately** \_\_\_\_\_

**Is a safety valve fitted to every part of the superheater which can be shut off from the boiler** \_\_\_\_\_

**Area of each safety valve** \_\_\_\_\_ **Are the safety valves fitted with easing gear** \_\_\_\_\_ **Working pressure as per plate** \_\_\_\_\_

**Rules** \_\_\_\_\_ **Pressure to which the safety valves are adjusted** \_\_\_\_\_ **Hydraulic test pressure, and** \_\_\_\_\_

**tubes** \_\_\_\_\_, **castings** \_\_\_\_\_ **and after assembly in place** \_\_\_\_\_ **Are drain cocks or valves fitted to free the superheater from water where necessary** \_\_\_\_\_

*Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with.*

FOR AND ON BEHALF OF  
THE CALEDON SHIPBUILDING & ENGINEERING CO. LTD.  
The foregoing is a correct description,

1940		1941		
Dates of Survey while building	During progress of work in shops - -	Dec 21, 1940	Jan 19-4, Feb 7-11-21, Mar 19-21, Apr 5-8, May 5-8, Apr 12-25-27-30, June 2-5-9-13-16-20-26.	are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.)
	During erection on board vessel - -	See March 2, Report.		Total No. of visits in Boiler Shop 26.

Is this Boiler a duplicate of a previous case Yes. If so, state Vessel's name and Report No. R. & a "Gold Ranger" Rpt. No 92

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

This Boiler has been constructed under special survey in accordance with the Rules & the approved plan. The materials & workmanships are good, & the boiler was found tight & sound under hydraulic pressure.

It has been efficiently fitted on board, & its safety valves have been adjusted <sup>length</sup> <sup>dimension</sup>  
under steam for the working pressure of 150 lbs per sq. inch.

In my opinion it is eligible to be classed in the Register Book  
with the record of D.B.S 9-41

Survey Fee	...	...	£ 14 : 16 : 0	When applied for,	19...
Travelling Expenses (if any)	£	:	:	When received,	19...

*See Mach.<sup>y</sup> Report*

Committee's Minute GLASGOW 14 OCT 1941

Assigned SEE ACCOMPANYING MACHINERY REPORT.

John Houston -  
Engineer Surveyor to Lloyd's Register of Shipping.

Lloyd's Register  
Foundation